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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,179	11/01/2005	Theodorus Petru Everardus Antonius Hubbers	121640-050000845	7684
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JONES DAY 222 EAST 41ST ST NEW YORK, NY 10017			EXAMINER BULLOCK, IN SUK C	
			ART UNIT	PAPER NUMBER
			1797	
			MAIL DATE	DELIVERY MODE
			06/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,179	Applicant(s) HUBBERS ET AL.	
	Examiner In Suk Bullock	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/5/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,520,724 to Bauer et al. (hereinafter "Bauer") in view of U.S. Patent

6,340,429 to Minkinen et al. (hereinafter "Minkinen") and U. S. Patent 6,395,952 to Barchas (hereinafter "Barchas").

Bauer discloses a process for the recovery of low molecular weight C_{2+} hydrocarbons, i.e., ethylene, from a gas mixture obtained by the cracking of hydrocarbons and having been freed of high molecular weight hydrocarbons (col. 1, lines 5-8). Following the sole figure in the reference, the process comprises: a FCC cracking waste gas (1) is fed into an absorption column (2) with a regenerated scrubbing agent (C_{4+} hydrocarbons) at a temperature of $-40^{\circ}C$, wherein the overhead comprising methane and hydrogen is withdrawn and a bottoms comprising a loaded scrubbing agent (C_{2+} hydrocarbons) is passed into a regenerating column (14), the regenerated scrubbing agent is heated and returned into the lower region of the regenerating column (14), the overhead product (C_2/C_3 hydrocarbon gas mixture) of the regeneration column (18) is passed into a separator (20) to recover a product gas flow rich in C_2/C_3 hydrocarbons (25) and components which have condensed out (mostly scrubbing agent) are returned from the separator (20) into the upper region of the regenerating column (14), the scrubbing agent withdrawn from the sump of the regenerating column and which is not returned into the regenerating column is cooled to $-40^{\circ}C$ and recycled to the absorption column. See also col. 3, line 20 to col. 5, line 27.

Bauer fails to disclose the claimed hydrogenation step wherein the C_4/C_5 stream is hydrogenated before being either separated or recycled as solvent to the absorptive demethanizer.

Minkkinen discloses a similar process for separating ethane and ethylene from a steam cracking effluent by solvent absorption (col. 1, lines 7-10). The steam cracked effluent contains undesirable acetylenic compounds in addition to ethylene and propylene (col. 1, lines 11-16) and, therefore, Minkkinen discloses carrying out at least in part a hydrogenation in liquid phase which is very selective and which essentially eliminates all of the triple-bond compounds and the diene compounds (col. 2, lines 11-62).

Although Bauer is silent with regard to the starting feedstock containing any acetylenic compounds and dienes, it would have been expected that the feedstock would have contained these impurities because it is widely known that these are inherently in the feedstock as evidenced by Minkkinen. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Bauer by including a hydrogenation step prior to the separation and recycle of the scrubbing agent because Minkkinen has taught that carrying out the hydrogenation of a partly liquid phase that contains many fewer light compounds results in better control of temperature of the exothermic reaction, a much more selective reaction is obtained without loss of ethylene and a catalyst life is increased (col. 2, line 65 to col. 3, line 8).

Bauer also fails to disclose a solvent containing a compound derived from a metal of group 10 or 11 of the Periodic Table of Elements for use in recovering ethylene and propylene from a stream comprising ethylene and propylene.

Barchas discloses a method for recovering high purity olefins from cracked gas effluents or other paraffin/olefin gaseous mixture by use of a chemical absorption process (abstract; col. 1, lines 5-15 and col. 6, lines 10-18).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Bauer by employing the chemical absorption process (copper salt to complex with olefins and thereby effectively separate olefins from paraffins) as disclosed by Barchas because Barchas has disclosed a higher purity olefins can be recovered and eliminates the need for distillation separation of close boiling olefins and paraffins (col. 3, lines 58-60).

Citation of Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6,358,399 discloses a process for separating ethane and ethylene by solvent absorption and hydrogenation of the solvent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is 571-272-5954. The examiner can normally be reached on Monday - Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/In Suk Bullock/
Examiner, Art Unit 1797